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REGION III  
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SUBJECT: C&D Recycling

DATE: MAY 10 1991

FROM: *fa* Joseph W. Kunz, Chief  
Planning & Technical Support Section (3AT11)

TO: Michael Towle, RPM  
SE Pennsylvania Remedial Section (3HW21)

In response to your April 2 request, our comments on the air emissions and air dispersion modeling associated with the C&D Recycling Draft Risk Assessment are attached. We hope that this serves your needs.

If you have any questions or comments please contact Thomas Casey at x2906.

Attachment

cc: P. Flores  
S. Bumble  
T. Casey

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# TECHNICAL ASSESSMENT SECTION COMMENTS ON THE C&D RECYCLING RISK ASSESSMENT

The following comments refer to Section 2.2.5., Section 3.4.1.1., and Appendix A of a risk assessment of the C&D Recycling superfund site performed by Fred C. Hart Associates. The comments are divided into two groups. The first group addresses the emissions estimation scheme; the second group concerns the modeling of ambient concentrations. These comments do not address estimations of exposure, the relation of exposure to human health or ecological effects, or other toxicological matters. The scope of this report is limited to the estimation of impacts on air quality.

## Estimation of Mass Emission Rates

In its Draft Risk Assessment, the consultant attempts to estimate emissions of contaminated, respirable particulate matter (PM<sub>10</sub>) by determining the increase in pollutant concentrations downwind of the site and back-calculating an emission rate. To perform this calculation, the consultant used information derived from upwind and downwind PM<sub>10</sub> data and meteorological data collected on 27 November 1987.

These PM<sub>10</sub> data are inappropriate for use in an upwind/downwind emissions estimation scheme at this site. The downwind monitors were too close to significant sources of lead and other pollutants. For the upwind/downwind technique to succeed, it is necessary for the downwind monitors to be sufficiently distant from the source to record impacts from the entire source area. Table 3-9 of the risk assessment demonstrates that the monitors were effected quite differently for each pollutant. This table, along with the ratio of monitored impacts for each pollutant, is partially reproduced in Table 1, below. The wide variance in ratios illustrate that the monitors were impacted much differently and that the "uniform emissions" assumption made by the consultant is inadequate.

TABLE 1

Relative Impact on the Two Downwind Monitors  
for Selected Pollutants

	Monitor 2	Monitor 3	Ratio
Cadmium	$7.70 \times 10^{-4}$	$1.07 \times 10^{-3}$	1.4
Lead	$1.53 \times 10^{-3}$	$3.92 \times 10^{-2}$	25.6
Mercury	$2.00 \times 10^{-5}$	$7.00 \times 10^{-5}$	3.5
Zinc	$4.33 \times 10^{-3}$	$7.13 \times 10^{-3}$	2.3

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Given the problems with the monitored data, the upwind/downwind method of emissions estimation cannot not be used in a satisfactory manner without the collection of more on-site data. There were several other flaws associated with the consultant's estimation of emissions. While these issues could be resolved, they are not reviewed here due to the intractability of the monitoring problem. The consultant may discuss these issues by contacting Tom Casey.

An alternative approach to the upwind/downwind method for baseline emissions is to estimate mass emissions using the techniques found in **Rapid Assessment of Exposure to Particulate Emissions from Surface Contamination Sites** (EPA 600/8-85-002; NTIS PB85-192219) and the data collected during on-site soil surveys. The guidance offered in **Rapid Assessment** is explicit and will not be reproduced here, except to stress that the site should be divided into areas for which particular soil data are relevant (as opposed to washing out emissions gradients by using a site-wide average). Should technical questions or concerns develop, the consultant may contact Tom Casey.

To estimate emissions due to the disturbance of soils during remedial activities, the analyst should consult **Compilation of Air Pollution Emission Factors** (EPA AP-42) and **Gap Filling PM<sub>10</sub> Emission Factors for Selected Open Area Dust Sources** (EPA 450/4-88-003; attached).

#### **Estimation of Downwind Concentrations**

The consultant's methodology for estimating the transport of pollutants to off-site receptors is acceptable. The analyst should be reminded that the current version of ISCST can significantly overpredict impacts from area sources. This overprediction, which decreases with distance from the source, is overcome by subdividing sources. Presently, the sensitivity of the model to source size must be determined on a case specific basis.

While an ideal method for estimating on-site pollutant concentrations does not exist, the consultant's use of a box model is inappropriate. The box model does not account for transport of pollutant from one part of the site to another and the mixing height is arbitrary, and the assumption of a well-mixed boundary layer is unfounded. The methodology for examining on-site impacts should be the same as that used to estimate off-site concentrations. Again, the relationship between source-receptor distance and source size may be important.

#### **Conclusions**

Given the poor monitor location during on-site air monitoring, the upwind/downwind technique of emission rate estimation is inapplicable. The consultant should model emissions by the methods found in the guidance documents listed

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above. Additionally the use of a box model to calculate on-site concentrations is inappropriate. The consultant should model the transport of pollutants on-site with a dispersion model as described above.

For your consideration while planning remedial activities, **Control of Open Fugitive Dust Sources** (EPA 450/3-88-008) is attached, please copy and return.

If you have any question or comments please contact Tom Casey.

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